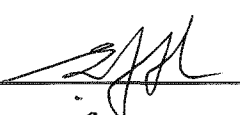
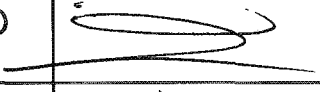
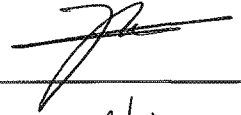
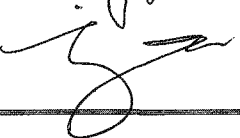





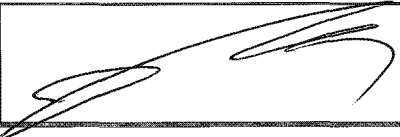
PASSAGE PLAN

LPGC G. DOLCE

Voyage No. : V001(B)

Ulsan, Korea to Balboa, Panama

This passage plan was briefed on & reviewed by:					
1/O		2/O		3/O	
ABC		ABB		ABA	
		C/O			

Confirmed by:	
MTR	



VOY.: 001	PORT: ULSAN , KOREA	DATE: 28 TH FEB 2018
[SYSTEM CONFIGURATION]		
1. CHART INSTALLATION <ul style="list-style-type: none"> • OFFICIAL CHART FORMATS <ul style="list-style-type: none"> - SOLAS COMPLIANT - ENCS OF AN APPROPRIATE SCALE AND ACCURACY • RCDS MODE <ul style="list-style-type: none"> - APPROPRIATE RNCs - APPROPRIATE FOLIO OF PAPER CHARTS - RISK ASSESSMENT • CONTINGENCY CHART PROVISION • TIME TO PROCURE AND RECEIVE • TIME TO INSTALL 	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
2. UPDATES <p>1) SAFETY NOTICES</p> <ul style="list-style-type: none"> • NOTICES TO MARINERS (NM) • TEMPORARY AND PRELIMINARY NOTICES (T&P NM, AIO) • LOCAL NM • RADIO NAVIGATIONAL WARNINGS (NAVAREAS & WZs) • TIME TO UPDATE ALL ECDIS <p>2) CHART PERMITS AND LICENCE</p> <ul style="list-style-type: none"> • RELEVANT ENC AND RNC PERMITS HELD ON BOARD • CHART PERMITS UP TO DATE • CHART PERMIT EXPIRY • ECDIS LICENCE EXPIRY <p>3) ECDIS</p> <ul style="list-style-type: none"> • LATEST SOFTWARE • GENERIC AND TYPE SPECIFIC TRAINING 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
3. SOFTWARE CONFIGURATION <p>1) ECDIS SOFTWARE</p> <ul style="list-style-type: none"> • LATEST MANUFACTURER'S SOFTWARE PATCH IS INSTALLED • LATEST PRESENTATION LIBRARY (IHO S-52) • LATEST DATA PROTECTION STANDARDS (IHO S-63) • READ THE LATEST IMO GUIDANCE ON ECDIS ANOMALIES • REPORT ECDIS ANOMALIES TO THE APPROPRIATE AUTHORITY. 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
4. DISPLAY CONFIGURATION <p>1) DISPLAY MODE</p> <ul style="list-style-type: none"> • DISPLAY SET-UP <ul style="list-style-type: none"> - UNLOAD ALL ROUTES - UNLOAD ALL MANUAL CONSTRUCTS - FULL SCREEN (HIDE SIDEBAR) 	<input checked="" type="checkbox"/>	

<ul style="list-style-type: none"> - DAY WHITE PALETTE • CHART SETTINGS <ul style="list-style-type: none"> - DISPLAY MODE 'ALL OTHER' - CHART PRIORITY ENC - CHART AUTOLOAD ON - CHART AUTOSCALE ON - SCALE MINIMUM ON - AIO LAYER ON - SHALLOW PATTERN ON - FULL LIGHT LINES ON - SHOW CORRECTION ON - CHART BOUNDARIES ON - SHOW ISOLATED DANGERS IN SHALLOW WATER ON - TRADITIONAL CHART SYMBOLS OR SIMPLIFIED - TRADITIONAL AREAS OR SYMBOLISED - TWO OR FOUR COLOUR SHADES • SAFETY SETTINGS <ul style="list-style-type: none"> - SAFETY DEPTH (SEE BELOW FOR GUIDANCE) - SAFETY CONTOUR (SEE BELOW FOR GUIDANCE) - SHALLOW CONTOUR - DEEP CONTOUR • ROUTE SETTINGS <ul style="list-style-type: none"> - DISPLAY OF CROSS TRACK LIMIT (XTL) - DISPLAY OF DISTANCES - DISPLAY OF TRUE COURSES - DISPLAY OF WAYPOINT NAMES - DISPLAY OF TURN RADIUS 	<input checked="" type="checkbox"/>
2) SAFETY VALUES <ul style="list-style-type: none"> • SAFETY DEPTH • SAFETY CONTOUR • SAFETY HEIGHT 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
3) OTHER VALUES <ul style="list-style-type: none"> • SHALLOW CONTOUR • DEEP CONTOUR 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
5. ROUTE PLANNING <ul style="list-style-type: none"> 1) NEW ROUTE <ul style="list-style-type: none"> • BERTH TO BERTH • AREAS WHERE THE SERVICES OF A PILOT WILL BE USED • NAME THE ROUTE • LOCATE START AND END POINTS 2) ADDING WAYPOINTS <ul style="list-style-type: none"> • ADD WAYPOINT AT START LOCATION • CONSTRUCT ROUTE ON SMALL SCALE 	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

ED 002238 00001397-00004

- ANCHORAGE AREA	<input type="checkbox"/>
2. ACTIONS FOLLOWING CHECK	
• VIEW LISTED DANGERS	<input checked="" type="checkbox"/>
• USE CURSOR PICK TO VIEW ADDITIONAL INFORMATION	<input type="checkbox"/>
• MODIFY ROUTE TO AVOID LISTED DANGERS	<input checked="" type="checkbox"/>
• DISREGARD DANGERS DEEMED NOT RELEVANT	<input checked="" type="checkbox"/>
• RE-CHECK RELEVANT LEGS FOLLOWING MODIFICATIONS	<input checked="" type="checkbox"/>
• IF GAPS IN ENC COVERAGE VISUALLY CHECK RNCs	<input type="checkbox"/>
• VISUAL CHECK OF ENTIRE ROUTE ON APPROPRIATE SCALE CHARTS	<input checked="" type="checkbox"/>
• SAVE ROUTE	<input checked="" type="checkbox"/>
[SUPPLEMENTARY INFORMATION]	
1. MANUAL CONSTRUCTS	
1) HIGHLIGHT	
• PLANNED CHANGES OF SAFETY DEPTH AND SAFETY CONTOUR	<input checked="" type="checkbox"/>
• NO GO LINES	<input checked="" type="checkbox"/>
• INTERNATIONAL REGULATIONS, CODES AND GUIDELINES	<input type="checkbox"/>
• SHIPS' ROUTEING, REPORTING SYSTEMS AND VTS	<input type="checkbox"/>
• PLANNED TIME ZONE CHANGES	<input checked="" type="checkbox"/>
• TIDAL DIAMONDS	<input checked="" type="checkbox"/>
• TRUE DIRECTION OF THE PLANNED ROUTE	<input checked="" type="checkbox"/>
• ALL AREAS OF DANGER	<input checked="" type="checkbox"/>
• AREAS OF LIMITED DATA	<input type="checkbox"/>
• AREAS OF SPECIAL INTEREST AND CONCERN	<input type="checkbox"/>
• AREAS OF MARINE ENVIRONMENTAL PROTECTION	<input type="checkbox"/>
• POINTS OF 'NO RETURN' AND CONTINGENCIES	<input type="checkbox"/>
• CHANGES IN IALA SYSTEMS OF MARITIME BUOYAGE	<input type="checkbox"/>
• AREAS WHERE ACCURACY OF POSITION FIXING IS CRITICAL	<input type="checkbox"/>
• AREAS OF MAXIMUM RELIABILITY OF POSITION FIXING	<input type="checkbox"/>
• WEATHER CONCERNS AND MEASURES TO BE TAKEN	<input type="checkbox"/>
[DETAILED BRIEFING]	
• OVERALL SPEED, TIME (ETD, ETA) AND DISTANCE	<input type="checkbox"/>
- SIGNIFICANT CHANGES FROM THE FEASIBILITY BRIEF	
- CHANGES TO SPEED EN-ROUTE	
- PASSAGE GRAPH	
• ROUTE AND ALTERNATIVES	<input checked="" type="checkbox"/>
- NO GO LINES	
- LIKELY CONCENTRATIONS OF FISHING VESSELS	
- MAIN SHIPPING ROUTES IMPINGING ON PLANNED ROUTE	
- MARINE ENVIRONMENT PROTECTION MEASURES	
- MARPOL	
• OTHER	<input checked="" type="checkbox"/>
- SUNRISE AND SUNSET TIMES AND LOCATIONS	
- CHANGE OF TIME ZONES AND LOCATIONS	

<ul style="list-style-type: none">- PREDICTED CURRENTS, LIKELY STRENGTH AND DIRECTION- KNOWN METEOROLOGICAL DATA- TERRITORIAL SEA BOUNDARIES- ANTI-PIRACY AREAS	
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SK SHIPPING PASSAGE PLAN

DATE : 28 Feb. 2018

VESSEL : G. DOLCE VOYAGE NO.: V001(B) FROM : Ulsan, Korea
T O : Balboa, Panama

ETD : 01-Mar-2018 16:00 Time Diff.: - 9 Hrs Draft: Dep. Fore 6.00 Aft 8.00
Distance : 8900.3 NM (Berth-Berth) + 5 Hrs Arr. Fore 6.00 Aft 8.00
Speed : 17.00 Kts Onboard Consumption Sea margin
Duration : 21 D - 19 H - 32 M I.F.O. 1950.00 Ton 500.00 Ton 1450.00 Ton
ETA : 22-Mar-2018 21:32 L.S.M.G.O. 185.30 Ton 5.00 Ton 180.30 Ton
L.S.F.O. 220.00 Ton 0.00 Ton 220.00 Ton

(01) Special subject by section

No.	Section	Remarks	Position Fixing Methods		
			Primary	Second	ECDIS
1	From	SBTS #2	Visual & RADAR	GPS	60/30/5 Min.
	To	NW of HizenTorishima			
2	From	NW of HizenTorishima	GPS, Visual, Radar	Celestial	60 Min.
	To	North Pacific Ocean 1			
3	From	North Pacific Ocean 1	GPS	Celestial	60 Min.
	To	TSS IN			

4	From	TSS IN	<ul style="list-style-type: none"> - Check / record ship's speed, heading, UKC cont'sly. Ship's position should be fixed by visual method, Radar & GPS, and compared. Maintain ship's position on true course on the chart if possible. - Caution about incoming vessels and give a wide berth to all traffics. Use parallel index to object to check ship's movement easily, if available. Beware of fishing vessels, small crafts & overtaking & crossing vessels and give sufficient distance from such vessels as much as possible. - Avoid shallow water area marked on the chart. Depth, UKC, effects of tide, stream & prevailing weather condition should be monitored with echo sounder. If course or speed is suddenly changed due to such effect, this should be immediately brought to the attention of bridge members and they should consider alteration of course or speed for safety. 	GPS, Visual, Radar	GPS	10/30/60 Min.
	To	Balboa P/S	<ul style="list-style-type: none"> - Turn on echo sounder printer & check depth on sounder - B.W.L. 'C' / Steering Mode : Hand steering - Master Con. - 2 S/G engage. - Conduct S/G Hard to Hard test as per Check list 			
5	From	Balboa P/S	<ul style="list-style-type: none"> - Beware of fishing vessels, small crafts & overtaking & crossing vessels and give sufficient distance from such vessels as much as possible. Avoid shallow water area marked on the chart. Depth, UKC, effects of tide, stream & prevailing weather condition should be monitored with echo sounder. If course or speed is suddenly changed due to such effect, this should be immediately brought to the attention of bridge members and they should consider alteration of course or speed for safety. - During the approach to pilot station, reduce vessel's speed to take pilot. Passing pilot station marks entry to port, the time of which should be recorded. Passing station marks entry to port, the time of which should be recorded. 	Visual, Radar	GPS	05 Min.
	To	Panama Inner Anchorage	<ul style="list-style-type: none"> - Set engine stand-by and call Master at the position marked on relevant chart. Change helm to manual steering with 2 S/G turned on in due time. - Check all nav. Equip. as per check list prior to Anchoring - Call Master at Calling Point & B.W.L to 'B' - S/By Eng' - Turn on E/S printer - Engaged 2 S/G - Steering mode to hand - 1 Hr notice to E/R before S.B.E. - Conduct Main Engine Ahead/Astern test 			

- * Remarks :
- Throughout the passage, keep sharp lookout with all available means available, exerting good seamanship & compliance to COLREG.
 - Keep monitoring navigational warnings. (NAVTEX, Radio Nav. Warnings, etc)
Refer to 'Instructions and General Information' for details
 - ECDIS should be referred to as primary means of navigation: Refer to 'Instructions and General Information' for details.
 - Monitor weather/climate/current information through INMARSAT-C METAREA or NAVTEX.
If any inclement weather is to be detected, adjust vessel's heading & speed to minimize effect of heavy weather on the vessel
 - Maintain position on true course as shown in charts, especially during arrival or departure.
 - Prior to arrival & departure, test & check navigation equipment as per Bridge Checklist.
 - Comply with local radio and reporting regulation as stated in relevant chart & this plan.
Contact VTS or port control during arrival, departure or Singapore & Malacca strait transit in due time.
 - Always be open to receive experience of master and officers on this passage.
 - Position should be fixed by RADAR conspicuous object, Visual NavAids, Landfall lights, GPS, etc. Use parallel indexing with object marked on relevant chart, if available.

(02) Reference publications

S/No.	Publication	No./Volume/etc.	Remarks
1	Routing Charts	5127(03)	<u>NORTH PACIFIC OCEAN</u>
2	Ocean Passage for the World	ADP	e-NP136
3	Sailing Direction	ADP	Refer to relevant Vol.
4	Radio Signals	ADP	Refer to relevant Vol.
5	List of Lights	ADP	Refer to relevant Vol.
6	Tide Table	ADP	Refer to relevant Vol.
7	IALA Maritime Buoyage System	ADP	e-NP735
8	Load line zones chart	D6083	-
9	ENC	08/18	Corrected up to ECDIS
10	Guide to Port Entry Extracts	Vol.1 ~ 4	Received from company
11	Chart Catalogue	ADC	Refer to relevant sec.
12	Ship's Routing	IMO - ID927E(2017 Ed.)	Refer to relevant sec.
13	Distance Table	NP350(3)	Refer to relevant Vol.
14	The Mariner's Handbook	ADP	e-NP100
15	Bridge Team Management	2nd Ed.	Refer to relevant sec.
16	Bridge Procedures Guide	5th Ed. 2016	-

(03) Charts, ECDIS and publications were corrected up to Notice to Mariners No.:

ENC: 08/18 AIO: 06/18 ADP: 09/18

* ENC updates & AIO after Wk.06/18 are manually corrected in ENC cell, if relevant to current passage.

(04) ENC Charts to be used:

Chart	TITLE
CO200003	Costa Oeste De Colombia
CO200008	Cabo Gracias Dios Santa Marta
GB104802	C San Quentin Punta San Telmo
GB104811	Mexico to Ecuador
GB201022	Puerto Masachapa to Chanperico
GB201023	Barra de San Jose Punta Galerla
GB201024	Punta Maldonado Punta Mangrove
GB201026	Punta Mangrove Punta Farallon
GB201027	Outer Appr Golfo de California
GB201028	Punta Pescadero Punta Bronaugh
GB21021A	Golfo De Nicoya To Santa Elena
JP148NG0	Adjacent Seas of Japan 6
JP14CCPC	North Pacific Ocean 6
JP14IFV0	Adjacent Seas of Japan 10
JP14IG00	Adjacent Seas of Japan 11
JP14IG10	Adjacent Sea of Japan 12
JP14IG20	Adjacent Seas of Japan 13
JP14IG30	Adjacent Seas of Japan 14
JP24DJ00	Nansei Shoto 3
JP24IFVG	East China Sea 5
JP24IG00	East China Sea 6
JP24IG0G	Offing of Shikoku 3
JP24IG10	Offing of East Coast Honshu 07
JP24IG1G	Offing of East Coast Honshu 08
JP24NC80	Japan Sea 1
JP34IG00	Nansei Shoto 29
JP34IG04	Nansei Shoto 30
JP34IG08	Nansei Shoto 31

JP34IG0C	Nansei Shoto 32
JP34JN20	Kyushu 3
JP34KU3S	Kyushu 8
JP34M55S	Kyushu 13
JP34M560	Kyushu 14
JP34NC80	Kyushu 18
JP34NC84	Kyushu 19
KR1EN000	East Sea and Yellow Sea
KR1F0000	Republic of Korea
KR1G0000	Republic of Korea
KR1H0000	Korea to Taiwan
KR1J0000	Republic of Korea
KR1K0000	Republic of Korea
KR1L0000	Adjacent Seas of Korea
KR2F4000	South Coast of Korea and Appr
KR2G3000	Daehan Haehyeop and Approaches
KR2J2000	Southern Part of Korea
KR2K1000	Korea Strait to Sanmen Wan
KR3G3B00	Busan Hang to Geomundo
KR3G3E00	Busan Hang to Geomundo
KR3G3F00	Busan Hang to Kanmon Haehyeop
KR4G3B30	Busan Hang to Gadeokdo
KR4G3F10	Busan Hang to Gadeokdo
KR5G3B32	Ulsan Hang (Onsan)
PA3AM496	Punta Mala to Punta Burica
PA3AM929	Gulf of Panama
PA5CP005	Panama Canal - Pacific Entrance
US1HA01M	Hawaiian Islands
US1HA02M	Hawaii to French Frigate Shoals
US1WC07M	San Diego Aleutian Hawaiian I
US515410	Panama Canal Southern End

(05) Received Navtex station

NAVAREA	XI	XI	XI	XI	XI	XII			
Name of Station	Jukbyeon	Pyonsan	Moji	Naha	Yokohama	Honolulu			
NAVTEX	V	W	H	G	I	O			

(06) Following information clearly marked on the charts ? (VIQ 5, 4.30)

<input checked="" type="checkbox"/>	<u>True course and distance on planned track</u>
<input checked="" type="checkbox"/>	<u>Alter course positions.</u>
<input checked="" type="checkbox"/>	<u>Parallel indexing (Not from floating objects)</u>
<input checked="" type="checkbox"/>	<u>Methods and frequency of position fixing</u>
<input checked="" type="checkbox"/>	<u>Prominent navigation and radar marks</u>
<input checked="" type="checkbox"/>	<u>No-go areas (the excessive marking of no-go-areas should be discouraged)</u>
<input checked="" type="checkbox"/>	<u>Landfall targets and lights</u>
<input checked="" type="checkbox"/>	<u>Clearing lines and bearings</u>
<input checked="" type="checkbox"/>	<u>Transits, heading marks and leading lines</u>
<input checked="" type="checkbox"/>	<u>Significant tides or current</u>
<input checked="" type="checkbox"/>	<u>Safe speed and necessary speed alterations</u>
<input checked="" type="checkbox"/>	<u>Changes in machinery status</u>
<input checked="" type="checkbox"/>	<u>Minimum under keel clearance</u>
<input checked="" type="checkbox"/>	<u>Positions where the echo sounder should be activated</u>

<input checked="" type="checkbox"/>	<u>Crossing and high density traffic areas</u>
<input checked="" type="checkbox"/>	<u>Safe distance off</u>
<input checked="" type="checkbox"/>	<u>Anchor clearance</u>
<input checked="" type="checkbox"/>	<u>Contingency plans</u>
<input checked="" type="checkbox"/>	<u>Abort positions</u>
<input checked="" type="checkbox"/>	<u>VTs and reporting points</u>
<input checked="" type="checkbox"/>	<u>Radar Object</u>
<input checked="" type="checkbox"/>	<u>Chart Change Position</u>
<input checked="" type="checkbox"/>	<u>Previous Course to be all Erased.</u>

(07) Departure port information

Port:

Ulsan, Korea

Pilot station VHF CH.	13	Port Control VHF CH.	14	VTs VHF CH.	14/16
- Information required for reporting : - Pilotage arrangements should be made through the Master or via agent 24h in advance, but no later than 3h in advance. - Vessels should contact Pilot to advise arrival information on VHF CH.13 at least 2h prior to arrival. - All vessels should maintain a continuous listening watch on VHF Chs 14 and 16 whilst in the VTs area.					
- Other information required: Refer to Back page ADP Information					

(08) Departure port tidal information

DW Density	1.025						Air draft	41.85	M
Departure Draft	Forward	6.00	M	Aft	8.00	M	Midship	7.00	M

(09) Departure port tidal information

DATE	High Water		Low Water	
	Time	Height(m)	Time	Height(m)
Refer to attached tide table				

* Refer to attached tide table for details

(10) Arrival port information

Port:

Balboa, Panama

Pilot station VHF CH.	16/12/13	Port Control VHF CH.	12/16	VTs VHF CH.	12/16
- Information required for reporting : - Pre-arrival notification: Vessels shall send the following details by radio at least 96h in advance to the Marine Traffic Control Unit of the Panama Canal Authority (stating "NEGAT" if any answer is "no", "none", or "not applicable"). - Vessels failing to provide accurate or complete pre-arrival notification may not be scheduled for transit ahead of vessels that have complied with this requirement or that have already been assigned Pilots for transit.					
- Other information required: Refer to Back page ADP Information					
ETA :	17.00 kts	23-Mar-2018 19:32			

(11) Arrival port tidal information

DW Density	1.010						Air draft	41.85	M
Arrival Draft	Forward	6.00	M	Aft	8.00	M	Midship	7.00	M
DATE	High Water					Low Water			
	Time		Height(m)		Time		Height(m)		
Refer to attached tide table									

* Refer to attached tide table for details

(12) Bar clearing tidal information

Date	Location	Draft on DEP. (A)	Ship's speed	Squat at this spd/draft (B)	Min. UKC (C)	Heel effect (D)	Hogging/Sagging (E)	Water Density (F)	Etc (G)	Required depth above chart datum (A+B+C+D+E+F+G=H)	Charted depth at bar (I)	Required rise of tide (H-I)
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Refer to attached UKC report

(Heeling correction : 2°: 0.64m, 4°: 1.28m, 8°: 2.57m 12°: 3.89m, 16.0°: 5.25m)

Date	HW		LW		Required rise of tide occurs between the following times on this date
	Time	Height	Time	Height	

Refer to attached tide table

*** It should be considered to slow down ship's speed if can not meet required rise of tide.**

The above calculation is based on Time Zone: UTC - 9.0

The above calculation is based on Time Zone: UTC + 5.0

(13) Tidal current at the bar

Location : Ulsan, Korea

Date	Slack	Max	Direction	Degree	Speed (Kts)
N/A	N/A	N/A	N/A	N/A	N/A

* Refer to attached tide & stream table for details.

Location : Balboa, Panama

Date	Slack	Max	Direction	Degree	Speed (Kts)
N/A	N/A	N/A	N/A	N/A	N/A

* Refer to attached tide & stream table for details.

(14) Environmental consideration

	Item	Remark
1	ECA(Emission Control Area / Sox)	ECA (U.S.A.)
2	Control of Sewage/Gray Water	Comply with local regulation
3	Ballast water	Applied
4	Particular Sensitive Sea Areas	N/A (Refer to Mariner's Handbook)
5	MARPOL Annex I / V Special Area	-
6	Others	No other considerations to be made

Instructions and General information

1. Duty organization

		0000 - 0400 1200 - 1600		0400 - 0800 1600 - 2000		0800 - 1200 2000 - 2400	
Deck	Officer	2/O	LEE GHA RAM	1/O	GU JAHUN	3/O	LYU JIMIN
	Rating	ABB	RAUL VERGEL NADALA	ABC	RHODOLFO JR. SANTAMARIA MONTANTE	ABA	JOHN EMMANUEL REYES RECALDE
Engine	Engineer	2/E	KIM YEON JOONG	1/E	HWANG YANGYUP	3/E	KIM SUNGKUK
	Rating	OLA	ARMEL SASE ARRIESGADO	OLB	JETHRO CIASICO PORRAS	OL1	BERLINO HUELE CUEVA
Others		Port arrival/departure, or other condition requiring Bridge Watch level of more than B during extended period of time				C/O	KU JAE HYOUNG
		Additional lookout during restricted visibility					
		OSA	JUNE DESAMITO YANGUAS	OSB	CRIZALDO ANDAL DE CLARA	BSN	JEFREY PASION AGRON

* Bridge watch condition as per HSEQ-SOP-P3-03

Open Waters		Watch condition	
Clear weather with little or no traffic	Bridge watch	A	
	Engine watch	A or UMS	
Clear weather with higher density traffic	Bridge watch	B	
	Engine watch	B	
Restricted visibility with little or no traffic	Bridge watch	A or B	
	Engine watch	A or B	
Restricted visibility with higher density traffic	Bridge watch	B or C	
	Engine watch	B or C	
Restricted Waters (Limited Maneuvering Room such as river, strait etc)		Watch condition	
Clear weather with little or no traffic	Bridge watch	B or C	
	Engine watch	B or C	
Clear weather with higher density traffic	Bridge watch	C	
	Engine watch	C	
Restricted visibility with little or no traffic	Bridge watch	C	
	Engine watch	C	
Restricted visibility with higher density traffic	Bridge watch	C	
	Engine watch	C	
One lookout if required	F/cle	1 person	
Entering or Leaving Port		Watch condition	
Clear weather with little or no traffic	Bridge watch	C	
	Engine watch	C	
Clear weather with higher density traffic	Bridge watch	C	
	Engine watch	C	
Restricted visibility with little or no traffic	Bridge watch	C	
	Engine watch	C	
Restricted visibility with higher density traffic	Bridge watch	C	
	Engine watch	C	

A - (1) Watch Officer + Able Seaman

WATCH LEVEL B - Master + (1) Watch Officer + Able Seaman

C - Master + (2) Watch Officer + Able Seaman

2. Reporting system to be applied

1) Port

VTIS	VHF CH.
Ulsan, Korea	13/14
Balboa, Panama	12/13/16

3. Instructions to officers

- A. Keep sharp lookout at all the times
- B. All officers must understand this passage plan thoroughly and if any doubt or suggestion, call Master
- C. To be tested air/electronic whistle at every noon
- D. To be tested auto pilot & changed over steering gear at every watch.
- E. Do not stay in chart room more than 5 minutes in night watch
- F. OOW must call master whenever you have any doubt or meet any unexpected cases
- G. OOW must be bear in mind standing order & master's night order
- H. OOW must fix position of vessel with DGPS and land mark as reasonable service, if you can, obtain radar position and compare with both (RADAR, DGPS) fixed position
- I. All officers should report promptly to the master as follows ;
 - 1) In case of Restricted visibility less than 2 miles, BF Scale observed above 7
 - 2) In case that ship's safe operation is to be affected by the moment of other ship(s)
 - 3) In case that can not keep a good course by heavy traffic, heavy weather or rough sea condition
 - 4) In case that can not keep make a landfall or confirm the depth in time as estimated
 - 5) In case that the land or navigational aids had been in sight in a far different place, or the depth sounded is so different from that on chart
 - 6) In case that main engine, steering gears or any equipment essential to the safe navigation are out of order
 - 7) Any probability of damage arising from heavy weather
 - 8) In case that the circumstances of the case are to be developed to a case of critical or special operation or in doubt or in question about ship's safe operation.

4. Verification of GPS & ECDIS Position accuracy

Position of the ship determined and displayed by the ECDIS shall be verified frequently using the following alternative means of position fixing:

- 1) Secondary position fixing system - GPS of a different make or model
- 2) Radar parallel indexing and the use of clearing bearings by Gyro
- 3) Plotting Visual fixes using 3 Radar ranges
- 4) Plotting Visual cross bearing fixes using at least 3 Lines of Position (LoP)
- 5) Celestial observation fixes
- A. Monitoring positional accuracy of GPS
 - Positional accuracy of GPS should be monitored. For GPS, HDOP should be frequently monitored; HDOP value of less than 3 is acceptable for position fixing.
- B. For more accurate comparison of ECDIS information with actual surroundings, activate RADAR overlay function.
- C. Interval to check accuracy of GPS and ECDIS is as follows: (SOP-P3-A8)
 - 1) Ocean navigation : every 1 hour
 - 2) Coastal navigation : every 30 minutes
 - 3) Entering, leaving port, shallow water and pilotage waters : every 10, 5 minutes.

This comparison should be made with position marked on paper chart by visual means, RADAR or GPS, whatever applicable.

5. Navigational warnings or information

- A. Keep monitoring navigational warnings from INMARSAT-C (EGC) and NAVTEX
- B. Update navigation warnings on charts
- C. Officers should receive weather fax at least once a day
- D. Precautions on the use of NAVTEX receiver
 - 1) Station should be programmed to cover only the stations of the area the vessel is currently sailing and is about to sail.
O.O.W. can refer to coverage of NAVTEX shown in ECDIS to manually program NAVTEX reception status.
 - 2) Program the receiver to monitor the message types intended to receive. It is recommended to receive most B₂ character, still certain messages not relevant to the vessel circumstances might be excluded.
 - 3) Upon receipt of NAVTEX message, this should be reviewed by O.O.W. & confirmed if this is relevant to the current passage. If relevant, O.O.W. should mark the contents on the relevant nautical charts & ECDIS.

6. Notice for usage of charts.

- A. Select the latest published charts.
- B. Use the charts corrected by the latest issued Notice to Mariners.
- C. Select adequate charts in referring to the title of charts.
- D. Use the largest scaled charts by referring to the catalogue of charts.
- E. Select the charts marked accurate depth.
- F. Put down warning/leading lines in order to clear dangerous places on charts.
- G. When passing narrow/dangerous area, check navigational information. (traffic condition, depth, tide, current, weather, distance from charted symbols to ship's course line, etc.)
- H. Charts include the legend "WGS84 positions can be plotted directly on this chart".
Some charts contain information on Lat. & Long. Shift values that should be applied to GPS positions before they are charted.
- I. All officers have previewed the chart datum line of voyage route.

7. Notice for usage of ECDIS

- A. All navigation officers are reminded that ECDIS is Primary means of navigation, no longer for training purpose.
- B. For safe navigation with ECDIS, all officers should be proficient with functions of & information from ECDIS.
- C. All O.O.W. should be reminded of capacity & limitation of ECDIS. Over-reliance on ECDS is discouraged, and position should be verified with that in paper chart through conventional means.
- D. Safety depth setting should be configured & observed to throughout all phrases of the voyage.
(Refer to ECDIS Maintenance card placed near ECDIS for configuration)
- E. All O.O.W. should be able to understand & interpret alarm & warning of ECDIS.
- F. NAVTEX & EGC and any other navigational warning relevant to current passage should also be plotted on ECDIS by O.O.W. upon receipt of such message.

8. Navigational equipment to be used on this passage

- A. Radar : Keep running 2 Radar (Scale in use : 12 mile & 3-6 Mile)
- B. Radar Plotting : Compare with displayed data from ARPA
- C. 2 DGPS : Displayed Navigation Data Mode & Navigation Route Mode
DGPS is referenced to WGS84 and it is recommended that the DGPS receiver is maintained referenced to that datum.
- D. Main Gyro Compass and Magnetic : Check Gyro Error & Deviation at Every Watch
- E. Sextant : Taking Ship's Position If weather permitting.
- F. Echo Sounder : Keep Running , When Passing channel of Shallow Water.
- G. Doppler Log : Keep running during passage,
- H. Day Light Signal : Ready for use (Electric & Air) at all time.

9. Company UKC Policy (INTERTANKO Recommendation): Ref. HSEQ-SOP-P3-A6

- A. Ocean passage : 20% of the deepest draught
- B. Fairways, Coastal, River : 15% of the deepest draught
- C. Inside port(A) : 10% of the deepest draught
 - 1) This chapter shall be applicable to vessels over 50,000 tons by summer deadweight
 - 2) Deepest draft shall be maintained 10% unless otherwise specified.
 - 3) Despite the draft nominated by charterer or cargo nomination that does not meet the above requirement of UKC, and when Local Regulation, Rule or Recommendation provided by responsible authority warrants safety and the recommended contents are reasonable, Master may use his discretion in deciding UKC.
 - 4) In of 3) above, Master shall check following terms through the relevant authority or terminal
 - a) Master must collect the latest information of sea bed condition for the berth and sounding chart directly from the local authorities or terminals before arrival / lightering. Should this not be possible, Master shall request for those information to Owners / Charterers. In whatever case may be, berthing at discharge port and unberthing at loading port shall be done in high waters.
 - b) Cargo discharge shall be commenced well before low water as far as possible.
 - c) If concerned with possibility of grounding, vessel must keep away the berth.
 - d) If berth vacation is required, information for vacation situation shall be requested and secured from Terminal and Agent, who shall be kept ready to assist the vessel instantly.
 - e) If and when a reduced UKC is anticipated, Master must report Company in earlier stage.

D. Inside port(B) : Master's discretion

- 1) This chapter shall be applicable to vessels less than 50,000 tons by summer deadweight.
- 2) Where the vessel is required, by operational considerations, to reduce UKC below 10% Master must take full account of the factors listed above. for decision of safe UKC.

E. In calculating UKC, following factors and local conditions shall be taken into consideration in addition to other factors that may affect UKC.

- 1) Squat. (For deep draft vessel, when passing Malacca & Singapore strait, recommended UKC includes squat)
- 2) Weather, height of swell, tidal height and range, atmospheric pressure, and changes of sea water density and inland waters.
- 3) Condition of sea bed (underwater soil condition and stability)
- 4) Vessel size, maneuverability and increase of draft by heeling.
- 5) Reliability of observed draught against calculation with consideration of hogging or sagging.
- 6) Accuracy of Hydrographic data and tidal predictions.
- 7) Reduced depths over underwater pipelines.

10. Marine Environment Protection

A. Disposal of Garbage outside Special Areas

- 1) Subject to the provisions of Regulations 4, 5 and 6 of this Annex:
 - (a) the disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products which may contain toxic or heavy metal residues, is prohibited;
 - (b) the disposal into the sea of the following garbage shall be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:
 - (i) 25 nautical miles for dunnage, lining and packing materials which will float;
 - (ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse;
 - (c) disposal into the sea of garbage specified in sub-paragraph (b)(ii) of this Regulation may be permitted when it has passed through a comminuter or grinder and made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than 3 nautical miles. Such comminuted or ground garbage shall be capable of passing through a screen with opening no greater than 25 millimeters.
- 2) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements shall apply.

B. Disposal of Garbage within Special Areas

- 1) For the purposes of this Annex the special areas are the Mediterranean Sea area, the Baltic Sea area, the Black Sea area, the Red Sea area, the 'Gulfs area' which are defined as follows:
 - (a) The Mediterranean Sea area means the Mediterranean Sea proper including the gulfs and seas therein with the boundary between the Mediterranean and the Black Sea constituted by the 41°N parallel and bounded to the west by the Straits of Gibraltar at the meridian of 5°36'W.
 - (b) The Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia and the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of the Skaw in the Skagerrak at 57°44.8'N.
 - (c) The Black Sea area means the Black Sea proper with the boundary between the Mediterranean and the Black Sea constituted by the parallel 41°N.
 - (d) The Red Sea area means the Red Sea proper including the Gulfs of Suez and Aqaba bounded at the south by the rhumb line between Ras si Ane (12°8.5'N, 43°19.6'E) and Husn Murad (12°40.4'N, 43°30.2'E).
 - (e) The 'Gulfs area' means the sea area located north west of the rhumb line between Ras al Hadd (22°30'N, 59°48'E) and Ras al Fasteh (25°04'N, 61° 25'E).
- 2) Subject to the provisions of Regulation 6 of this Annex:
 - (a) Disposal into the sea of the following is prohibited:
 - (i) all plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags; and
 - (ii) all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining and packing materials;
 - (b) Disposal into the sea of food wastes shall be made as far as practicable from land, but in any case not less than 12 nautical miles from the nearest land.
- 3) When the garbage is mixed with other discharges having different disposal or discharge requirements the more stringent requirements, shall apply.
- 4) Reception facilities within special areas:

- (a) The Government of each Party to the Convention, the coastline of which borders a special area undertakes to ensure that as soon as possible in all ports within a special area, adequate reception facilities are provided in accordance with Regulation 7 of this Annex, taking into account the special needs of ships operating in these areas.
- (b) The Government of each Party concerned shall notify the Organization of the measures taken pursuant to subparagraph (a) of this Regulation. Upon receipt of sufficient notifications the Organization shall establish a date from which the requirements of this Regulation in respect of the area in question shall take effect. The Organization shall notify all Parties of the date so established no less than twelve months in advance of that date.
- (c) After the date so established, ships calling also at ports in these special areas where such facilities are not yet available, shall fully comply with the requirements of this Regulation.

C. Should be effort to Marine Environment Protect In accordance with MARPOL Regulation.

Garbage type ¹	All ships except platforms ⁴		Off shore platforms located more than 12 nm from nearest land and ships when alongside or within 500 metres of such platforms ⁴ Regulation 5
	Outside special areas Regulation 4 (Distances are from the nearest land)	Within special areas Regulation 6 (Distances are from nearest land or nearest ice shelf)	
Food waste comminuted or ground ²	3 nm, en route and as far as practicable ³	12 nm, en route and as far as practicable ³	Discharge permitted
Food waste not comminuted or ground	12 nm, en route and as far as practicable	Discharge prohibited	Discharge permitted
Cargo residues 5,6 not contained in wash water	12 nm, en route and as far as practicable	Discharge prohibited	Discharge permitted
Cargo residues 5,6 contained in wash water		12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2)	Discharge permitted
Cleaning agents and additives 6 contained in cargo hold wash water	Discharge permitted	12 nm, en route and as far as practicable (subject to conditions in regulation 6.1.2)	Discharge permitted
Cleaning agents and additives 6 in deck and external surfaces wash water		Discharge permitted	Discharge permitted
Animal Carcasses (should be split or otherwise treated to ensure the carcasses will sink immediately)	Must be en route and as far from the nearest land as possible. Should be 100 nm and maximum water depth.	Discharge prohibited	Discharge permitted
All other garbage including plastics, synthetic ropes, fishing gear, plastic garbage bags, incinerator ashes, clinkers, cooking oil, floating dunnage, lining and packing materials, paper, rags, glass, metal, bottles, crockery and similar refuse	Discharge prohibited	Discharge prohibited	Discharge permitted

1. When garbage is mixed with or contaminated by other harmful substances prohibited from discharge or having different discharge requirements, the more stringent requirements shall apply.
2. Comminuted or ground food wastes must be able to pass through a screen with mesh no larger than 25 mm.
3. The discharge of introduced avian products in the Antarctic area is not permitted unless incinerated, autoclaved or otherwise treated to be made sterile.
4. Offshore platforms located 12 nm from nearest land and associated ships include all fixed or floating platforms engaged in exploration or exploitation or associated processing of seabed mineral resources, and all ships alongside or within 500 m of such platforms.
5. Cargo residues means only those cargo residues that cannot be recovered using commonly available methods for unloading.
6. These substances must not be harmful to the marine environment.

C. Refer to RESOLUTIONs / MEPC Resolutions / 62nd Session / Res.MEPC.201(62)

D. When a vessel intend to sailing in China Sea area. Should be flow the China Regulation strictly.

11. Navigators briefing meeting (Date : 27TH FEB. 2018)

	Item	Yes
1	Persons who attended the pre-departure navigation meeting: <u>MTR</u> , <u>C/O</u> , <u>1/O</u> , <u>2/O</u> , <u>3/O</u> , <u>ABA</u> , <u>ABC</u> , <u>ABB</u>	<input checked="" type="checkbox"/>
2	Has the charted plan been discussed?	<input checked="" type="checkbox"/>
3	Have the areas of high risk been determined and discussed?	<input checked="" type="checkbox"/>
4	Have the applicable watch conditions been identified for the different sections of the passage?	<input checked="" type="checkbox"/>
5	Have the conditions for increasing the watch been discussed?	<input checked="" type="checkbox"/>
6	Have the position fixing intervals for the different sections of the passage been discussed?	<input checked="" type="checkbox"/>
7	Have the primary and secondary means of position fixing for the different sections of the passage been discussed?	<input checked="" type="checkbox"/>
8	Have the team members been made aware of any defective navigation equipment?	<input checked="" type="checkbox"/>
9	Have above comments been incorporated in the plan?	<input checked="" type="checkbox"/>
10	Have all officers have previewed the chart datum line of voyage route?	<input checked="" type="checkbox"/>

In open sea Squat(metre)= $C_b X V^2 / 100$
 In confined area Squat(metre)= $2 X C_b X V^2 / 100$

SQUAT EFFECT

G. DOLCE

Mean draft	Cb	Speed at Open sea (Kts)						Speed at confined area (Kts)					
		3	6	9	10	12	14	3	4	5	6	7	8
12.10	0.7430	0.07	0.27	0.60	0.74	1.07	1.46	0.13	0.24	0.37	0.53	0.73	0.95
12.00	0.7420	0.07	0.27	0.60	0.74	1.07	1.45	0.13	0.24	0.37	0.53	0.73	0.95
11.90	0.7411	0.07	0.27	0.60	0.74	1.07	1.45	0.13	0.24	0.37	0.53	0.73	0.95
11.80	0.7406	0.07	0.27	0.60	0.74	1.07	1.45	0.13	0.24	0.37	0.53	0.73	0.95
11.70	0.7392	0.07	0.27	0.60	0.74	1.06	1.45	0.13	0.24	0.37	0.53	0.72	0.95
11.60	0.7383	0.07	0.27	0.60	0.74	1.06	1.45	0.13	0.24	0.37	0.53	0.72	0.95
11.50	0.7373	0.07	0.27	0.60	0.74	1.06	1.45	0.13	0.24	0.37	0.53	0.72	0.94
11.40	0.7363	0.07	0.27	0.60	0.74	1.06	1.44	0.13	0.24	0.37	0.53	0.72	0.94
10.00	0.7231	0.07	0.26	0.59	0.72	1.04	1.42	0.13	0.23	0.36	0.52	0.71	0.93
9.80	0.7212	0.06	0.26	0.58	0.72	1.04	1.41	0.13	0.23	0.36	0.52	0.71	0.92
9.60	0.7193	0.06	0.26	0.58	0.72	1.04	1.41	0.13	0.23	0.36	0.52	0.70	0.92
9.40	0.7175	0.06	0.26	0.58	0.72	1.03	1.41	0.13	0.23	0.36	0.52	0.70	0.92
9.20	0.7156	0.06	0.26	0.58	0.72	1.03	1.40	0.13	0.23	0.36	0.52	0.70	0.92
9.00	0.7138	0.06	0.26	0.58	0.71	1.03	1.40	0.13	0.23	0.36	0.51	0.70	0.91
8.80	0.7120	0.06	0.26	0.58	0.71	1.03	1.40	0.13	0.23	0.36	0.51	0.70	0.91
8.60	0.7101	0.06	0.26	0.58	0.71	1.02	1.39	0.13	0.23	0.36	0.51	0.70	0.91
8.40	0.7083	0.06	0.25	0.57	0.71	1.02	1.39	0.13	0.23	0.35	0.51	0.69	0.91
8.20	0.7064	0.06	0.25	0.57	0.71	1.02	1.38	0.13	0.23	0.35	0.51	0.69	0.90
8.00	0.7045	0.06	0.25	0.57	0.70	1.01	1.38	0.13	0.23	0.35	0.51	0.69	0.90
7.80	0.7026	0.06	0.25	0.57	0.70	1.01	1.38	0.13	0.22	0.35	0.51	0.69	0.90
7.60	0.7007	0.06	0.25	0.57	0.70	1.01	1.37	0.13	0.22	0.35	0.50	0.69	0.90
7.40	0.6988	0.06	0.25	0.57	0.70	1.01	1.37	0.13	0.22	0.35	0.50	0.68	0.89
7.30	0.6978	0.06	0.25	0.57	0.70	1.00	1.37	0.13	0.22	0.35	0.50	0.68	0.89
7.20	0.6968	0.06	0.25	0.56	0.70	1.00	1.37	0.13	0.22	0.35	0.50	0.68	0.89
7.00	0.6947	0.06	0.25	0.56	0.69	1.00	1.36	0.13	0.22	0.35	0.50	0.68	0.89
6.80	0.6927	0.06	0.25	0.56	0.69	1.00	1.36	0.12	0.22	0.35	0.50	0.68	0.89

* Cb= V(displacement)/Lbp x breadth x draft(mean), but obtained the above Cb factors from loading manual

In open sea Squat(metre)=CbXV²/100
 In confined area Squat(metre)=2XCbXV²/100

SQUAT EFFECT

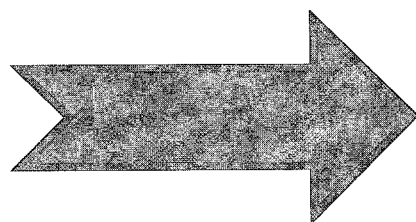
G. DOLCE

Mean draft	Cb	Speed at Open sea (Kts)							Speed at confined area (Kts)				
		15	16	16.5	17	17.5	18	9	10	11	12	13	14
12.10	0.7430	1.67	1.90	2.02	2.15	2.28	2.41	1.20	1.49	1.80	2.14	2.51	2.91
12.00	0.7420	1.67	1.90	2.02	2.14	2.27	2.40	1.20	1.48	1.80	2.14	2.51	2.91
11.90	0.7411	1.67	1.90	2.02	2.14	2.27	2.40	1.20	1.48	1.79	2.13	2.50	2.91
11.80	0.7406	1.67	1.90	2.02	2.14	2.27	2.40	1.20	1.48	1.79	2.13	2.50	2.90
11.70	0.7392	1.66	1.89	2.01	2.14	2.26	2.40	1.20	1.48	1.79	2.13	2.50	2.90
11.60	0.7383	1.66	1.89	2.01	2.13	2.26	2.39	1.20	1.48	1.79	2.13	2.50	2.89
11.50	0.7373	1.66	1.89	2.01	2.13	2.26	2.39	1.19	1.47	1.78	2.12	2.49	2.89
11.40	0.7363	1.66	1.88	2.00	2.13	2.25	2.39	1.19	1.47	1.78	2.12	2.49	2.89
10.00	0.7231	1.63	1.85	1.97	2.09	2.21	2.34	1.17	1.45	1.75	2.08	2.44	2.83
9.80	0.7212	1.62	1.85	1.96	2.08	2.21	2.34	1.17	1.44	1.75	2.08	2.44	2.83
9.60	0.7193	1.62	1.84	1.96	2.08	2.20	2.33	1.17	1.44	1.74	2.07	2.43	2.82
9.40	0.7175	1.61	1.84	1.95	2.07	2.20	2.32	1.16	1.44	1.74	2.07	2.43	2.81
9.20	0.7156	1.61	1.83	1.95	2.07	2.19	2.32	1.16	1.43	1.73	2.06	2.42	2.81
9.00	0.7138	1.61	1.83	1.94	2.06	2.19	2.31	1.16	1.43	1.73	2.06	2.41	2.80
8.80	0.7120	1.60	1.82	1.94	2.06	2.18	2.31	1.15	1.42	1.72	2.05	2.41	2.79
8.60	0.7101	1.60	1.82	1.93	2.05	2.17	2.30	1.15	1.42	1.72	2.05	2.40	2.78
8.40	0.7083	1.59	1.81	1.93	2.05	2.17	2.29	1.15	1.42	1.71	2.04	2.39	2.78
8.20	0.7064	1.59	1.81	1.92	2.04	2.16	2.29	1.14	1.41	1.71	2.03	2.39	2.77
8.00	0.7045	1.59	1.80	1.92	2.04	2.16	2.28	1.14	1.41	1.70	2.03	2.38	2.76
7.80	0.7026	1.58	1.80	1.91	2.03	2.15	2.28	1.14	1.41	1.70	2.02	2.37	2.75
7.60	0.7007	1.58	1.79	1.91	2.03	2.15	2.27	1.14	1.40	1.70	2.02	2.37	2.75
7.40	0.6988	1.57	1.79	1.90	2.02	2.14	2.26	1.13	1.40	1.69	2.01	2.36	2.74
7.30	0.6978	1.57	1.79	1.90	2.02	2.14	2.26	1.13	1.40	1.69	2.01	2.36	2.74
7.20	0.6968	1.57	1.78	1.90	2.01	2.13	2.26	1.13	1.39	1.69	2.01	2.36	2.73
7.00	0.6947	1.56	1.78	1.89	2.01	2.13	2.25	1.13	1.39	1.68	2.00	2.35	2.72
6.80	0.6927	1.56	1.77	1.89	2.00	2.12	2.24	1.12	1.39	1.68	1.99	2.34	2.72

* Cb= V(displacement)/Lbp x breadth x draft(mean), but obtained the above Cb factors from loading manual

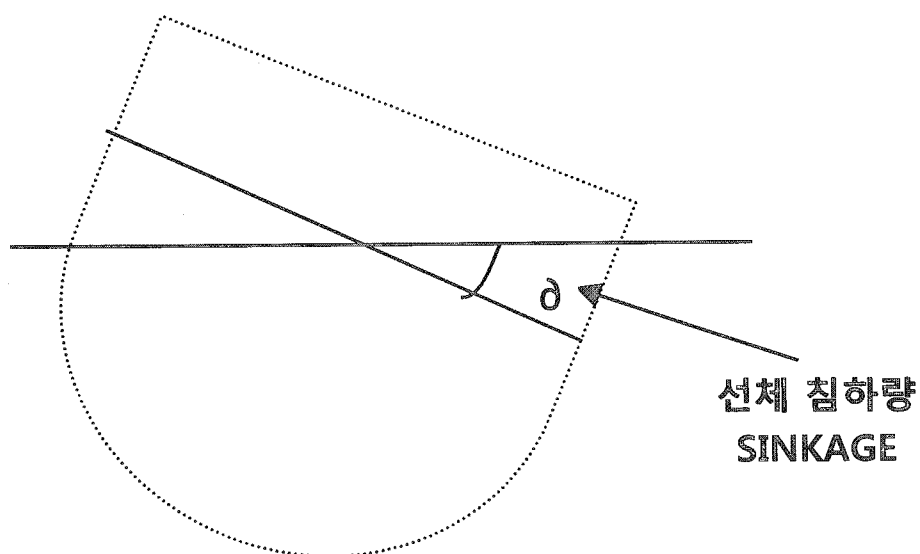
HEELING 에 의한 선체 침하량
SINKAGE BY HEELING
LPGC G. DOLCE

HEELING
0.1°
0.2°
0.4°
0.6°
0.8°
1°
2°
3°
4°
5°

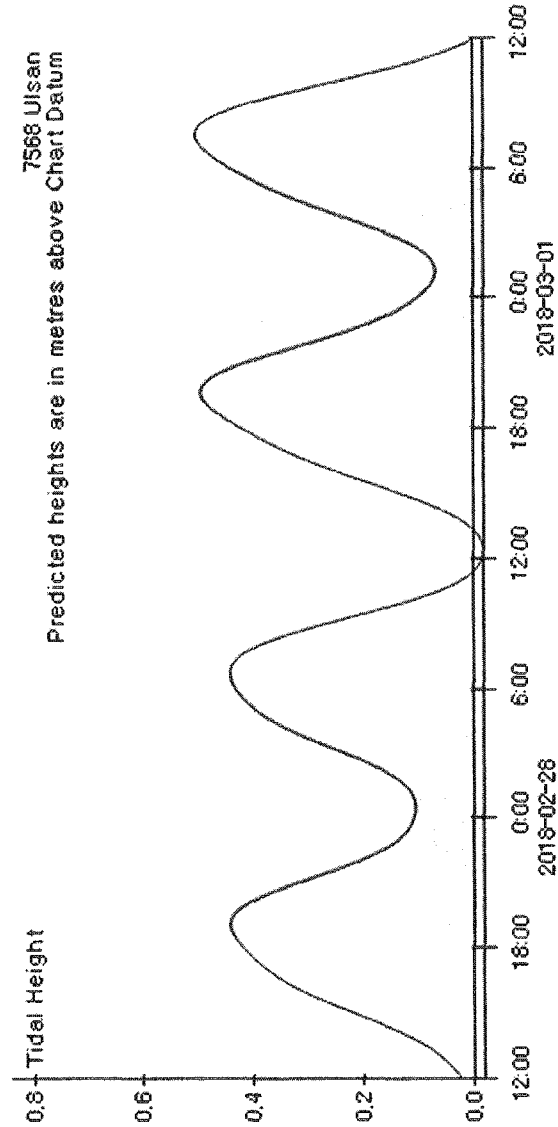
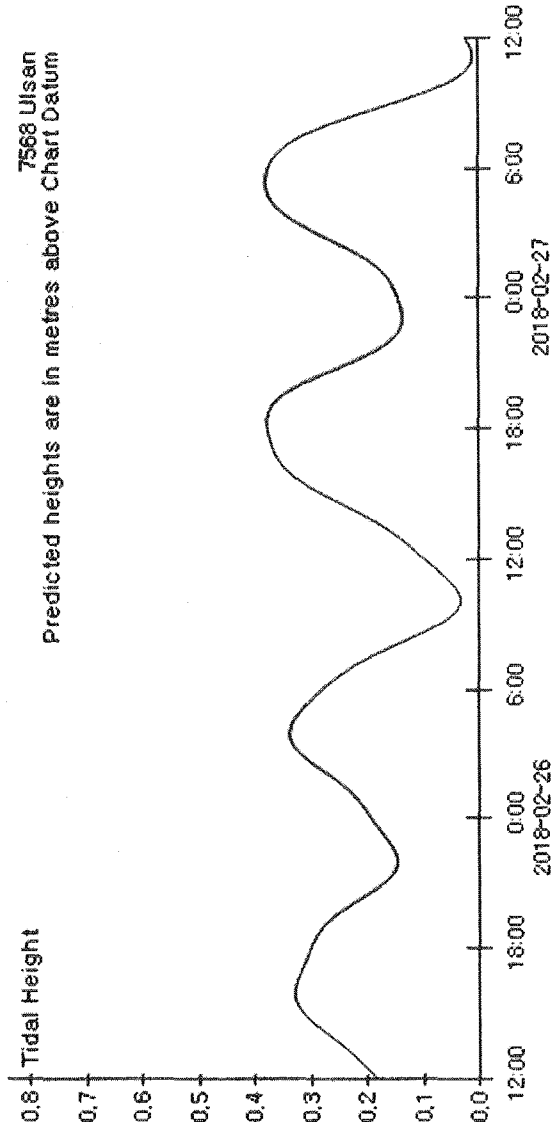


선체 침하량
0.032 m
0.064 m
0.128 m
0.192 m
0.256 m
0.319 m
0.639 m
0.959 m
1.280 m
1.601 m

* $\text{TAN}(\theta) \times (\text{BREADTH} / 2) = \text{SINKAGE OF VESSEL (선체 침하량)}$
 (BREADTH = 36.6 m)



TIDE TABLE



2018-02-25	
High 오전 2:54	0.3 m
High 오후 3:54	0.3 m
Low 오전 9:07	0.1 m
Low 오후 9:59	0.1 m

2018-02-26	
High 오전 3:55	0.3 m
High 오후 6:17	0.4 m
Low 오전 10:05	0.0 m
Low 오후 11:05	0.1 m

2018-02-27	
High 오전 5:17	0.4 m
High 오후 7:03	0.4 m
Low 오전 11:07	0.0 m

2018-02-28	
High 오전 6:44	0.4 m
High 오후 7:38	0.5 m
Low 오전 12:27	0.1 m
Low 오후 12:19	0.0 m

2018-03-01	
High 오전 7:30	0.5 m
High 오후 8:11	0.5 m
Low 오전 1:14	0.1 m
Low 오후 1:14	0.0 m

2018-02-28	
오후 9:00	0.4 m
오후 10:00	0.3 m
오후 11:00	0.2 m

2018-03-01	
오전 12:00	0.1 m
오전 1:00	0.1 m
오전 2:00	0.1 m
오전 3:00	0.2 m
오전 4:00	0.3 m
오전 5:00	0.4 m
오전 6:00	0.4 m
오전 7:00	0.5 m
오전 8:00	0.5 m
오전 9:00	0.4 m
오전 10:00	0.2 m
오전 11:00	0.1 m
오후 12:00	0.0 m
오후 1:00	0.0 m
오후 2:00	0.0 m
오후 3:00	0.0 m
오후 4:00	0.2 m
오후 5:00	0.3 m
오후 6:00	0.4 m
오후 7:00	0.5 m
오후 8:00	0.5 m
오후 9:00	0.5 m
오후 10:00	0.4 m
오후 11:00	0.2 m

2018-03-02	
오전 12:00	0.1 m
오전 1:00	0.1 m
오전 2:00	0.0 m
오전 3:00	0.1 m
오전 4:00	0.2 m
오전 5:00	0.3 m
오전 6:00	0.4 m
오전 7:00	0.5 m
오전 8:00	0.5 m
오전 9:00	0.5 m
오전 10:00	0.4 m
오전 11:00	0.2 m
오후 12:00	0.1 m
오후 1:00	0.0 m
오후 2:00	-0.1 m
오후 3:00	0.0 m
오후 4:00	0.1 m
오후 5:00	0.2 m
오후 6:00	0.3 m
오후 7:00	0.4 m
오후 8:00	0.5 m
오후 9:00	0.5 m

오후 10:00	0.5 m
오후 11:00	0.3 m

2018-03-03	
오전 12:00	0.2 m
오전 1:00	0.1 m
오전 2:00	0.0 m
오전 3:00	0.0 m
오전 4:00	0.1 m
오전 5:00	0.2 m
오전 6:00	0.3 m
오전 7:00	0.4 m
오전 8:00	0.5 m
오전 9:00	0.6 m
오전 10:00	0.5 m
오전 11:00	0.3 m
오후 12:00	0.2 m
오후 1:00	0.0 m
오후 2:00	-0.1 m
오후 3:00	-0.1 m
오후 4:00	0.0 m
오후 5:00	0.1 m
오후 6:00	0.3 m
오후 7:00	0.4 m
오후 8:00	0.5 m
오후 9:00	0.5 m
오후 10:00	0.5 m
오후 11:00	0.4 m

2018-03-04	
오전 12:00	0.3 m
오전 1:00	0.1 m
오전 2:00	0.0 m
오전 3:00	0.0 m
오전 4:00	0.0 m
오전 5:00	0.1 m
오전 6:00	0.2 m
오전 7:00	0.4 m
오전 8:00	0.5 m
오전 9:00	0.6 m
오전 10:00	0.5 m
오전 11:00	0.4 m
오후 12:00	0.3 m
오후 1:00	0.1 m
오후 2:00	0.0 m
오후 3:00	-0.1 m
오후 4:00	0.0 m
오후 5:00	0.1 m
오후 6:00	0.2 m
오후 7:00	0.3 m
오후 8:00	0.4 m
오후 9:00	0.5 m
오후 10:00	0.5 m
오후 11:00	0.4 m

2018-03-05	
오전 12:00	0.3 m
오전 1:00	0.2 m
오전 2:00	0.1 m
오전 3:00	0.0 m
오전 4:00	0.0 m
오전 5:00	0.1 m
오전 6:00	0.2 m
오전 7:00	0.3 m
오전 8:00	0.4 m
오전 9:00	0.5 m
오전 10:00	0.5 m
오전 11:00	0.5 m
오후 12:00	0.4 m
오후 1:00	0.2 m
오후 2:00	0.1 m
오후 3:00	0.0 m
오후 4:00	0.0 m
오후 5:00	0.1 m
오후 6:00	0.2 m
오후 7:00	0.2 m
오후 8:00	0.3 m
오후 9:00	0.4 m
오후 10:00	0.5 m
오후 11:00	0.4 m

2018-03-06	
오전 12:00	0.4 m
오전 1:00	0.2 m
오전 2:00	0.1 m
오전 3:00	0.0 m
오전 4:00	0.0 m
오전 5:00	0.0 m
오전 6:00	0.1 m
오전 7:00	0.2 m
오전 8:00	0.3 m
오전 9:00	0.4 m
오전 10:00	0.5 m
오전 11:00	0.5 m
오후 12:00	0.4 m
오후 1:00	0.3 m
오후 2:00	0.2 m
오후 3:00	0.1 m
오후 4:00	0.0 m
오후 5:00	0.1 m
오후 6:00	0.1 m
오후 7:00	0.2 m
오후 8:00	0.3 m
오후 9:00	0.4 m
오후 10:00	0.4 m
오후 11:00	0.4 m

2018-03-07	
오전 12:00	0.4 m

오전 1:00	0.3 m
오전 2:00	0.2 m
오전 3:00	0.1 m
오전 4:00	0.0 m
오전 5:00	0.0 m
오전 6:00	0.1 m
오전 7:00	0.1 m
오전 8:00	0.2 m
오전 9:00	0.3 m
오전 10:00	0.4 m
오전 11:00	0.4 m
오후 12:00	0.4 m
오후 1:00	0.3 m
오후 2:00	0.2 m
오후 3:00	0.1 m
오후 4:00	0.1 m
오후 5:00	0.1 m
오후 6:00	0.1 m
오후 7:00	0.2 m
오후 8:00	0.2 m

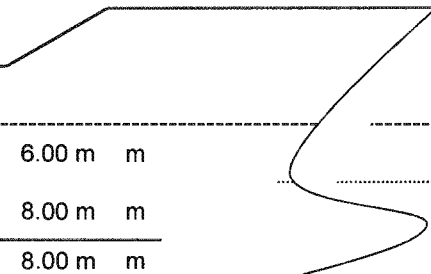
2018-03-22							
오전 3:20	1.6 m	오후 12:10	0.5 m	오후 9:20	3.7 m	오전 6:00	3.6 m
오전 3:30	1.8 m	오후 12:20	0.4 m	오후 9:30	3.5 m	오전 6:10	3.8 m
오전 3:40	2.0 m	오후 12:30	0.3 m	오후 9:40	3.4 m	오전 6:20	3.9 m
오전 3:50	2.2 m	오후 12:40	0.2 m	오후 9:50	3.2 m	오전 6:30	4.0 m
오전 4:00	2.4 m	오후 12:50	0.2 m	오후 10:00	3.0 m	오전 6:40	4.1 m
오전 4:10	2.6 m	오후 1:00	0.1 m	오후 10:10	2.8 m	오전 6:50	4.2 m
오전 4:20	2.8 m	오후 1:10	0.1 m	오후 10:20	2.6 m	오전 7:00	4.2 m
오전 4:30	3.0 m	오후 1:20	0.1 m	오후 10:30	2.4 m	오전 7:10	4.3 m
오전 4:40	3.2 m	오후 1:30	0.1 m	오후 10:40	2.3 m	오전 7:20	4.3 m
오전 4:50	3.4 m	오후 1:40	0.2 m	오후 10:50	2.1 m	오전 7:30	4.4 m
오전 5:00	3.5 m	오후 1:50	0.2 m	오후 11:00	1.9 m	오전 7:40	4.4 m
오전 5:10	3.7 m	오후 2:00	0.3 m	오후 11:10	1.7 m	오전 7:50	4.4 m
오전 5:20	3.8 m	오후 2:10	0.4 m	오후 11:20	1.5 m	오전 8:00	4.4 m
오전 5:30	4.0 m	오후 2:20	0.5 m	오후 11:30	1.3 m	오전 8:10	4.4 m
오전 5:40	4.1 m	오후 2:30	0.6 m	오후 11:40	1.2 m	오전 8:20	4.3 m
오전 5:50	4.2 m	오후 2:40	0.8 m	오후 11:50	1.0 m	오전 8:30	4.3 m
오전 6:00	4.3 m	오후 2:50	0.9 m			오전 8:40	4.2 m
오전 6:10	4.4 m	오후 3:00	1.1 m	2018-03-23		오전 8:50	4.1 m
오전 6:20	4.4 m	오후 3:10	1.2 m	오전 12:00	0.9 m	오전 9:00	4.0 m
오전 6:30	4.5 m	오후 3:20	1.4 m	오전 12:10	0.7 m	오전 9:10	3.9 m
오전 6:40	4.5 m	오후 3:30	1.6 m	오전 12:20	0.6 m	오전 9:20	3.8 m
오전 6:50	4.6 m	오후 3:40	1.8 m	오전 12:30	0.5 m	오전 9:30	3.7 m
오전 7:00	4.6 m	오후 3:50	2.0 m	오전 12:40	0.4 m	오전 9:40	3.6 m
오전 7:10	4.6 m	오후 4:00	2.2 m	오전 12:50	0.3 m	오전 9:50	3.4 m
오전 7:20	4.6 m	오후 4:10	2.4 m	오전 1:00	0.2 m	오전 10:00	3.3 m
오전 7:30	4.5 m	오후 4:20	2.6 m	오전 1:10	0.1 m	오전 10:10	3.1 m
오전 7:40	4.5 m	오후 4:30	2.8 m	오전 1:20	0.1 m	오전 10:20	3.0 m
오전 7:50	4.4 m	오후 4:40	3.0 m	오전 1:30	0.1 m	오전 10:30	2.8 m
오전 8:00	4.3 m	오후 4:50	3.2 m	오전 1:40	0.1 m	오전 10:40	2.7 m
오전 8:10	4.2 m	오후 5:00	3.4 m	오전 1:50	0.1 m	오전 10:50	2.5 m
오전 8:20	4.1 m	오후 5:10	3.5 m	오전 2:00	0.1 m	오전 11:00	2.3 m
오전 8:30	4.0 m	오후 5:20	3.7 m	오전 2:10	0.1 m	오전 11:10	2.2 m
오전 8:40	3.9 m	오후 5:30	3.8 m	오전 2:20	0.2 m	오전 11:20	2.0 m
오전 8:50	3.8 m	오후 5:40	4.0 m	오전 2:30	0.3 m	오전 11:30	1.8 m
오전 9:00	3.6 m	오후 5:50	4.1 m	오전 2:40	0.3 m	오전 11:40	1.7 m
오전 9:10	3.4 m	오후 6:00	4.2 m	오전 2:50	0.5 m	오전 11:50	1.5 m
오전 9:20	3.3 m	오후 6:10	4.4 m	오전 3:00	0.6 m	오후 12:00	1.4 m
오전 9:30	3.1 m	오후 6:20	4.4 m	오전 3:10	0.7 m	오후 12:10	1.2 m
오전 9:40	2.9 m	오후 6:30	4.5 m	오전 3:20	0.8 m	오후 12:20	1.1 m
오전 9:50	2.7 m	오후 6:40	4.6 m	오전 3:30	1.0 m	오후 12:30	1.0 m
오전 10:00	2.6 m	오후 6:50	4.6 m	오전 3:40	1.2 m	오후 12:40	0.9 m
오전 10:10	2.4 m	오후 7:00	4.7 m	오전 3:50	1.3 m	오후 12:50	0.8 m
오전 10:20	2.2 m	오후 7:10	4.7 m	오전 4:00	1.5 m	오후 1:00	0.7 m
오전 10:30	2.0 m	오후 7:20	4.7 m	오전 4:10	1.7 m	오후 1:10	0.6 m
오전 10:40	1.8 m	오후 7:30	4.7 m	오전 4:20	1.9 m	오후 1:20	0.5 m
오전 10:50	1.6 m	오후 7:40	4.7 m	오전 4:30	2.1 m	오후 1:30	0.5 m
오전 11:00	1.5 m	오후 7:50	4.7 m	오전 4:40	2.3 m	오후 1:40	0.4 m
오전 11:10	1.3 m	오후 8:00	4.6 m	오전 4:50	2.5 m	오후 1:50	0.4 m
오전 11:20	1.1 m	오후 8:10	4.5 m	오전 5:00	2.7 m	오후 2:00	0.4 m
오전 11:30	1.0 m	오후 8:20	4.5 m	오전 5:10	2.8 m	오후 2:10	0.4 m
오전 11:40	0.8 m	오후 8:30	4.4 m	오전 5:20	3.0 m	오후 2:20	0.4 m
오전 11:50	0.7 m	오후 8:40	4.3 m	오전 5:30	3.2 m	오후 2:30	0.4 m
오후 12:00	0.6 m	오후 8:50	4.1 m	오전 5:40	3.3 m	오후 2:40	0.5 m
		오후 9:00	4.0 m	오전 5:50	3.5 m	오후 2:50	0.5 m
		오후 9:10	3.9 m			오후 3:00	0.6 m

		2018-03-24					
오후 3:10	0.7 m	오전 12:00	1.8 m	오전 8:50	4.2 m	오후 6:00	2.5 m
오후 3:20	0.8 m	오전 12:10	1.6 m	오전 9:00	4.1 m	오후 6:10	2.7 m
오후 3:30	0.9 m	오전 12:20	1.5 m	오전 9:10	4.1 m	오후 6:20	2.8 m
오후 3:40	1.1 m	오전 12:30	1.3 m	오전 9:20	4.1 m	오후 6:30	3.0 m
오후 3:50	1.2 m	오전 12:40	1.2 m	오전 9:30	4.0 m	오후 6:40	3.1 m
오후 4:00	1.4 m	오전 12:50	1.0 m	오전 9:40	4.0 m	오후 6:50	3.3 m
오후 4:10	1.5 m	오전 1:00	0.9 m	오전 9:50	3.9 m	오후 7:00	3.4 m
오후 4:20	1.7 m	오전 1:10	0.8 m	오전 10:00	3.8 m	오후 7:10	3.5 m
오후 4:30	1.9 m	오전 1:20	0.7 m	오전 10:10	3.7 m	오후 7:20	3.6 m
오후 4:40	2.1 m	오전 1:30	0.6 m	오전 10:20	3.6 m	오후 7:30	3.7 m
오후 4:50	2.2 m	오전 1:40	0.5 m	오전 10:30	3.5 m	오후 7:40	3.8 m
오후 5:00	2.4 m	오전 1:50	0.4 m	오전 10:40	3.4 m	오후 7:50	3.9 m
오후 5:10	2.6 m	오전 2:00	0.4 m	오전 10:50	3.3 m	오후 8:00	4.0 m
오후 5:20	2.8 m	오전 2:10	0.3 m	오전 11:00	3.1 m	오후 8:10	4.1 m
오후 5:30	3.0 m	오전 2:20	0.3 m	오전 11:10	3.0 m	오후 8:20	4.1 m
오후 5:40	3.1 m	오전 2:30	0.3 m	오전 11:20	2.9 m	오후 8:30	4.2 m
오후 5:50	3.3 m	오전 2:40	0.3 m	오전 11:30	2.7 m	오후 8:40	4.2 m
오후 6:00	3.5 m	오전 2:50	0.3 m	오전 11:40	2.6 m	오후 8:50	4.2 m
오후 6:10	3.6 m	오전 3:00	0.3 m	오전 11:50	2.4 m	오후 9:00	4.3 m
오후 6:20	3.7 m	오전 3:10	0.4 m	오후 12:00	2.3 m	오후 9:10	4.3 m
오후 6:30	3.9 m	오전 3:20	0.4 m	오후 12:10	2.1 m	오후 9:20	4.2 m
오후 6:40	4.0 m	오전 3:30	0.5 m	오후 12:20	2.0 m	오후 9:30	4.2 m
오후 6:50	4.1 m	오전 3:40	0.6 m	오후 12:30	1.9 m	오후 9:40	4.2 m
오후 7:00	4.2 m	오전 3:50	0.7 m	오후 12:40	1.7 m	오후 9:50	4.1 m
오후 7:10	4.3 m	오전 4:00	0.8 m	오후 12:50	1.6 m	오후 10:00	4.1 m
오후 7:20	4.4 m	오전 4:10	1.0 m	오후 1:00	1.5 m	오후 10:10	4.0 m
오후 7:30	4.4 m	오전 4:20	1.1 m	오후 1:10	1.4 m	오후 10:20	3.9 m
오후 7:40	4.5 m	오전 4:30	1.2 m	오후 1:20	1.2 m	오후 10:30	3.8 m
오후 7:50	4.5 m	오전 4:40	1.4 m	오후 1:30	1.1 m	오후 10:40	3.7 m
오후 8:00	4.5 m	오전 4:50	1.6 m	오후 1:40	1.0 m	오후 10:50	3.6 m
오후 8:10	4.5 m	오전 5:00	1.7 m	오후 1:50	0.9 m	오후 11:00	3.5 m
오후 8:20	4.5 m	오전 5:10	1.9 m	오후 2:00	0.9 m	오후 11:10	3.4 m
오후 8:30	4.5 m	오전 5:20	2.1 m	오후 2:10	0.8 m	오후 11:20	3.3 m
오후 8:40	4.4 m	오전 5:30	2.2 m	오후 2:20	0.7 m	오후 11:30	3.1 m
오후 8:50	4.4 m	오전 5:40	2.4 m	오후 2:30	0.7 m	오후 11:40	3.0 m
오후 9:00	4.3 m	오전 5:50	2.6 m	오후 2:40	0.7 m	오후 11:50	2.9 m
오후 9:10	4.2 m	오전 6:00	2.7 m	오후 2:50	0.6 m	2018-03-25	
오후 9:20	4.2 m	오전 6:10	2.9 m	오후 3:00	0.6 m	오전 12:00	2.7 m
오후 9:30	4.1 m	오전 6:20	3.0 m	오후 3:10	0.6 m	오전 12:10	2.6 m
오후 9:40	3.9 m	오전 6:30	3.2 m	오후 3:20	0.6 m	오전 12:20	2.4 m
오후 9:50	3.8 m	오전 6:40	3.3 m	오후 3:30	0.7 m	오전 12:30	2.3 m
오후 10:00	3.7 m	오전 6:50	3.5 m	오후 3:40	0.7 m	오전 12:40	2.1 m
오후 10:10	3.6 m	오전 7:00	3.6 m	오후 3:50	0.8 m	오전 12:50	2.0 m
오후 10:20	3.4 m	오전 7:10	3.7 m	오후 4:00	0.9 m	오전 1:00	1.8 m
오후 10:30	3.3 m	오전 7:20	3.8 m	오후 4:10	0.9 m	오전 1:10	1.7 m
오후 10:40	3.1 m	오전 7:30	3.9 m	오후 4:20	1.0 m	오전 1:20	1.6 m
오후 10:50	2.9 m	오전 7:40	4.0 m	오후 4:30	1.2 m	오전 1:30	1.4 m
오후 11:00	2.8 m	오전 7:50	4.0 m	오후 4:40	1.3 m	오전 1:40	1.3 m
오후 11:10	2.6 m	오전 8:00	4.1 m	오후 4:50	1.4 m	오전 1:50	1.2 m
오후 11:20	2.4 m	오전 8:10	4.1 m	오후 5:00	1.6 m	오전 2:00	1.1 m
오후 11:30	2.3 m	오전 8:20	4.1 m	오후 5:10	1.7 m	오전 2:10	1.0 m
오후 11:40	2.1 m	오전 8:30	4.2 m	오후 5:20	1.9 m	오전 2:20	0.9 m
오후 11:50	1.9 m	오전 8:40	4.2 m	오후 5:30	2.0 m	오전 2:30	0.8 m
				오후 5:40	2.2 m		
				오후 5:50	2.3 m		

UKC Calculation Form

Name of vessel : G. DOLCE
 Voy No. V001(B)
 Location Ulsan, Korea
 Date & Time 1600LT 01st Mar.2018

Ship's Length 225.09 m Displacement 40175
 Ship's Breadth 36.60 m Block Coefficient 0.6947
 Density 1.025 g/cm3 Company Gross UKC policy 0.80 m
 Chart Datum WGS-84
 Available Speed 3.0 Knots
 (Master should confirm the speed and exchange with pilot)

Static Draft	FWD	6.00 m	m		Tide	0.20 m	m
	AFT	8.00 m	m		Chart depth	16.30 m	m
	Max. Draft	8.00 m	m		(22.7m In case of S'pore strait)		
Density(g/cm3)	1.025	0.00	m	Dynamic Draft	Depth	8.33	16.50
Heel (estimate)	0.3 deg	0.10	m				
Pitch (estimate)	0.3 deg	0.10	m				
Barometer(Hpa)	1013	0.00	m				
Deflection (Hogging/Sagging)	0.0 deg	0.00	m				
Survey Tolerance	-	0.00	m	0.33			
Squat	3.00kts	0.13	m				
Nature and stability of the bottom		0.00	m				
Accuracy of hydrographic		0.00	m				
Reduced depths over obstructions		0.00	m				
The predicted height of the tide		0.00	m				
Wave response allowance		0.00	m				
				Dynamic UKC	8.17		

FORMULAS:

Squat

* $C_b = \text{Displacement (M}^3) / L \times B \times D \times \text{Water Density}$
 (L: Length, B: Breadth, D: Current mean draft)

* $SQUAT (max) = C_b \times \text{Vessel speed}^2 / 100$

Density (* Refer to density table)

* 0.01m water level increases when the specific density is increased by 0.001 based on 1.025
 and 0.01m water level decreases when the specific density is decreased by 0.001 based on 1.025

Barometer (* Refer to barometer table)

* 0.01m water level decreases when the pressure of 1hpa is increased based on 1,013hpa
 and 0.01m water level increase when the pressure drops 1hpa based on 1,013hpa

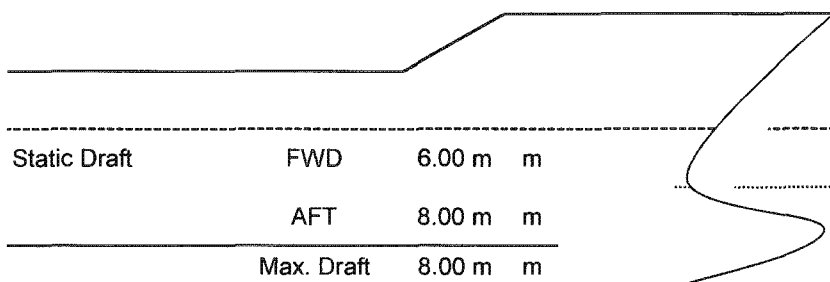
Survey Tolerance

* It is recommended to apply Safety Allowance of 0.3m at 0 ~ 20m Depth, but this is against Worst Case scenario and calculated as 0

UKC Calculation Form

Name of vessel : G. DOLCE
 Voy No. V001(B)
 Location Balboa, Panama
 Date & Time 1932LT 23rd Mar.2018

Ship's Length 225.09 m Displacement 40175
 Ship's Breadth 36.60 m Block Coefficient 0.6947
 Density 1.025 g/cm3 Company Gross UKC policy 0.80 m
 Chart Datum WGS-84
 Available Speed 3.0 Knots
 (Master should confirm the speed and exchange with pilot)



Static Draft	FWD	6.00 m	m		Tide	4.40 m	m
	AFT	8.00 m	m		Chart depth	11.40 m	m
	Max. Draft	8.00 m	m				
Density(g/cm3)	1.01	-0.15	m				
Heel (estimate)	0.3 deg	0.10	m				
Pitch (estimate)	0.3 deg	0.10	m				
Barometer(Hpa)	1013	0.00	m				
Deflection (Hogging/Sagging)	0.0 deg	0.00	m				
Survey Tolerance	-	0.00	m				
Squat	3.00kts	0.13	m				
Nature and stability of the bottom		0.00	m				
Accuracy of hydrographic		0.00	m				
Reduced depths over obstructions		0.00	m				
The predicted height of the tide		0.00	m				
Wave response allowance		0.00	m				

Dynamic UKC 7.62

FORMULAS:

Squat

* $C_b = \text{Displacement (M}^3) / L \times B \times D \times \text{Water Density}$
 (L: Length, B: Breadth, D: Current mean draft)

* $\text{SQUAT (max)} = C_b \times \text{Vessel speed}^2 / 100$

Density (* Refer to density table)

* 0.01m water level increases when the specific density is increased by 0.001 based on 1.025
 and 0.01m water level decreases when the specific density is decreased by 0.001 based on 1.025

Barometer (* Refer to barometer table)

* 0.01m water level decreases when the pressure of 1hpa is increased based on 1,013hpa
 and 0.01m water level increase when the pressure drops 1hpa based on 1,013hpa

Survey Tolerance

* It is recommended to apply Safety Allowance of 0.3m at 0 ~ 20m Depth, but this is against Worst Case scenario and calculated as 0

SK SHIPPING										WAY POINT LIST										G. DOLCE										GENERAL INFORMATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
From		Ulsan, Korea(49)		To		Balboa, Panama(-5)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)		Draft(m)			

SK SHIPPING WAY POINT LIST										G. DOLCE				GENERAL INFORMATION									
From		Ulsan, Korea(49)		To		Baiboa, Panama(-5)		Draft(m)		Draft(m)		Draft(m)		UKC ALLOWABLE		VOY: V001(B)		GENERAL INFORMATION					
WP NO.	Way Point Nav. Marks	POSITION		Track	DIST. N/M	Total DIST.	DTG	2018-03-23		Departure		Arrival		UKC	ETA at	GENERAL INFORMATION							
		LAT.	LONG					Method	Interval	FWD	6.00	AFT	8.00			TIDE	Unit (m)	Waypoint (UTC)	ENC OR REMARK	W/L	CATZOC		
28	Gulf of Panama	7.4500 N	79.2220 W	44.7	71.2	8829.3	71.0	R/G/C	10	DEEP	17.1	2.03	0.20	10.23	1.02	OK	4.10	Mar/22 19:30	PA3AM929	B	B		
29		8.3480 N	79.2210 W	0.1	49.8	8879.1	21.2	R/G/C	10	50	14.0	1.36	0.20	9.56	0.96	OK	3.33	Mar/22 23:04	PA3AM929	B	B		
30	TSS OUT	8.4550 N	79.2500 W	344.9	11.1	8890.2	10.1	R/G/C	10	34	12.0	1.00	0.20	9.20	0.92	OK	0.56	Mar/22 23:59	PA5CP005, US515410, PA3AM929	B	B,D		
31		8.5000 N	79.2860 W	321.5	5.8	8896.0	4.3	V/R/G	5	22	5.0	0.17	0.20	8.37	0.84	OK	1.10	Mar/23 01:09	PA5CP005	B	A2		
32	BALBOA P/S	8.5330 N	79.3130 W	320.9	4.3	8900.3	0.0	V/R/G	5	11.4	3.0	0.06	0.20	8.26	0.83	OK	1.26	Mar/23 02:35	PA5CP005	C	A2		
33	SEA BUOY	8.5170 N	79.3000 W	141.1	2.1	8902.4	-2.1	V/R/G	5	13.2	3.0	0.06	0.20	8.26	0.83	OK	0.42	Mar/23 03:17	PA5CP005	C	A2		
34	Pacific Anchorage	8.5019 N	79.3033 W	192.1	1.5	8903.9	-3.6	V/R/G	5	13.2	3.0	0.06	0.20	8.26	0.83	OK	0.30	Mar/23 03:47	PA5CP005	C	A2		